REMARKS

Applicants initially would like to thank Examiners Eyler and Prasad for the telephonic interview on June 26, 2002. During the interview, Applicant's invention as well as claim amendments were discussed in view of the outstanding rejections and cited references. As a result of the interview, Applicants respectfully submit this amendment for consideration by the Examiner.

Claims 1-26 and 44-45 are pending. Claims 10, 17, 22, 44 and 45 are cancelled without prejudice. Applicants amend claims 1, 2, 15, 18 and 26, and add new claim 46. Accordingly, after entry of this Amendment, claims 1-9, 11-16, 18-21, 23-26 and 46 will be pending for examination. Applicants submit that the amendments introduce no new matter and that claims 1-9, 11-16, 18-21, 23-26 and 46 are in condition for allowance.

Amendments to the Claims

Applicants amend independent claims 1 and 15 to replace "preselected antigen" with "antigen," and to define an antigen as "... an antigen selected from the group consisting of a prostate-specific membrane antigen, an ectodomain of a cytokine receptor, a viral protein and a tumor-specific protein ...." In addition, claim 15, clause (b), now recites "... an antigen fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypepide bond to the antigen ...." Support for these amendments is found in the application as filed at least at page 21, lines 25-30, and in original claims 10, 17 and 22.

Dependent claim 2 is amended to replace "preselected antigen" with "antigen."

Dependent claims 18 and 26 are amended to correct claim dependencies in view of the cancellation of claim 17.

Applicants submit that these amendments introduce no new matter.

New Claim

Support for new claim 46 can be found in the application as filed at least at page 21, lines 25-30 and in original claims 1 and 10.

Applicants submit that new claim 46 introduces no new matter.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 44-45 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being vague and indefinite for the recitation of "fusion proteins comprising localizing protein...." Claims 44-45 also are rejected under 35 U.S.C. 112, second paragraph, as allegedly being vague and indefinite for reciting "localizing protein." Applicants cancel without prejudice claims 44 and 45 thereby rendering these rejections moot.

Claims 1, 15, 44, 45 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being vague and indefinite for the recitation of "preselected antigen." Applicants cancel without prejudice claims 44 and 45 thereby rendering their rejection moot. Applicants amend independent claims 1 and 15 to replace "preselected antigen" with "antigen," and to further define an antigen. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-26, 44 and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,349,053 to Landolfi ("Landolfi") in view of Harvill et al., *J. Immunol.*, 157: 3165-3170 (1996) ("Harvill").

To render a claimed invention obvious, a combination of prior art references must teach or suggest all the claim limitations. Landolfi and Harvill fail to teach or suggest each of the limitations of independent claims 1 and 15.

Harvill teaches an anti-DNS-IgG3-IL2 construct. Harvill further teaches that an antigen can be associated with this construct by linking the antigen to a hapten dansyl (DNS). See Harvill, p. 3169, col. 2, lines 7-19. The construct disclosed in Harvill is an association of an antigen with an IgG3 molecule using DNS, a non-protein chemical compound. Accordingly, Harvill does not cure the deficiency of Landolfi. That is, Harvill does not teach or suggest a fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypeptide bond to an antigen.

Landolfi teaches "immunoligands" where the variable region of an immunoglobulin is replaced, or substantially replaced by a ligand component. A ligand, according to Landolfi, is

defined as "... a synthetic or naturally-occurring peptide or protein molecule ... that bears one or more determinant sites allowing it to be recognized by a receptor molecule on a cell surface." Landolfi, col. 4, lines 15-25. Applicants claimed invention as amended is directed to a fusion protein comprising an immunoglobulin heavy chain constant region linked to an antigen that is not a ligand as defined by Landolfi. See Applicants' application, page 21, lines 25-30.

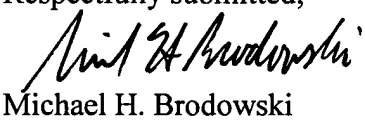
Therefore, neither Landolfi nor Harvill, alone or in combination, teaches or suggests all the limitations of the claimed invention as recited in amended independent claims 1 and 15. Accordingly, Applicants submit that amended claims 1 and 15 are novel and unobvious over the cited references and respectfully request reconsideration and withdrawal of this rejection with respect to claims 1 and 15.

Because claims 2-9, 11-14, 16, 18-21, and 23-26 depend directly or indirectly from claims 1 and 15, Applicants also submit that claims 2-9, 11-14, 16, 18-21, and 23-26 are patentable over the cited references and respectfully request withdrawal of this rejection with respect to these claims.

CONCLUSION

Based on the above amendments and remarks, Applicants respectfully submit that pending claims 1-9, 11-16, 18-21, 23-26 and 46 are in condition for allowance and request entry as such. If the Examiner believes that a conversation with Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to contact the undersigned.

Respectfully submitted,



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MARKED UP VERSION OF AMENDED CLAIMS SHOWING AMENDMENTS

1. (Amended) A method of enhancing the immunogenicity of ~~[a preselected]~~ an antigen in a mammal, the method comprising:

administering to the mammal intramuscularly, intravenously, transdermally or subcutaneously, a fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypeptide bond to the ~~[preselected]~~ antigen thereby to elicit an immune response against the ~~[preselected]~~ antigen, wherein the antigen is selected from the group consisting of a prostate-specific membrane antigen, an ectodomain of a cytokine receptor, a viral protein and a tumor-specific protein, and ~~[preselected]~~ the antigen ~~[in]~~ of the fusion protein elicits a stronger immune response in the mammal than the ~~[preselected]~~ antigen alone.

2. (Amended) The method of claim 1, further comprising administering the fusion protein in combination with an adjuvant in an amount sufficient to enhance the immune response against the ~~[preselected]~~ antigen of the fusion protein relative to the immune response against the ~~[preselected]~~ antigen of the fusion protein administered without the adjuvant.

15. (Amended) A composition for eliciting an immune response against ~~[a preselected]~~ an antigen in a mammal, the composition comprising an admixture for intramuscular, intravenous, transdermal or subcutaneous administration selected from the group consisting of:

(a) an antigen fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypeptide bond to the ~~[preselected]~~ antigen admixed with an adjuvant, wherein the antigen is selected from the group consisting of a prostate-specific membrane antigen, an ectodomain of a cytokine receptor, a viral protein and a tumor-specific protein; and

(b) ~~[a preselected]~~ an antigen fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypepide bond to the antigen, wherein the antigen is selected from the group consisting of a prostate-specific membrane antigen, an ectodomain of a cytokine receptor, a viral protein and a tumor-specific protein, admixed with an adjuvant fusion protein comprising an immunoglobulin heavy chain constant region linked by a polypeptide bond to an adjuvant protein.

18. (Amended) The composition of claim 15~~,~~ or 16~~,~~ ~~[or 17,]~~ wherein the immunoglobulin heavy chain constant region comprises an immunoglobulin hinge region.

26. (Amended) The composition of claim 15~~,~~ or 16~~,~~ ~~[or 17,]~~ wherein the immunoglobulin heavy chain constant region is defined by a amino acid sequence corresponding to an amino acid sequence defining a human immunoglobulin heavy chain constant region.